

Lake region on the 16th, where it appears to have been re-enforced by further contributions from Hudson's Bay and Labrador, forming an unusually extensive area of high pressure, whose centre was over the Gulf of St. Lawrence on the 18th and 19th, where the barometric reading averaged 30.70 on the morning of the former day. The influence of this high barometer in producing continued easterly winds and rain on the New England and New Jersey coasts from the 15th to the 20th, has already been alluded to.

No. VI. The extensive area of low pressure prevailing over the Lake region on the 18th and 19th, seems not only to have drawn from the northward and eastward the air that produced the high barometer of the preceding section, but also induced a flow from the south and west that gave rise to No. VI, whose existence may be traced from the Ohio valley on the morning of the 21st, backward to Indian Territory on the 19th, and forward over Maryland on the 22d to the Middle Atlantic coast, where traces of it still remained on the 26th.

No. VII. This area began, like the preceding one, in or near Texas, and, like it, its origin is attributable to the presence of an area of low pressure, (No. XIII,) which existed on the 27th in the Gulf of Mexico. Like it, also, the highest barometer at centre moved eastward, and was not remarkably conspicuous.

ATMOSPHERIC TEMPERATURE.

The isothermal lines, as given on chart No. II, show the average distribution of temperature during the month, which are supplemented by the small table, which gives the mean temperatures for the different geographical divisions. The cool weather of August was gradually succeeded throughout the Middle Atlantic States and neighboring sections by hot weather, accompanying the drought, the influence of which is not fully seen in the average temperatures. The extremes of temperature reported from sections in Dakota, and adjoining sections, have been quite remarkable—very hot southerly winds being reported during the 2nd and 9th, followed by frost on the 15th. Frosts were reported over extensive portions of the country on the 4th and 5th in New England; on the 15th and 16th from Michigan and Illinois to Dakota; on the 20th, 21st and 22nd, from Massachusetts and Pennsylvania to Wisconsin; on the 28th, 29th and 30th, from Ohio to Kansas and Minnesota; besides these, frosts were reported in portions of one or two States on the 8th, 10th, 12th, 14th, 19th, 23d, 25th, 26th and 27th.

PRECIPITATION.

Map No. III gives the details of the total amount of rain-fall for the month over the entire country, and the accompanying table shows the districts in which there has been an excess or deficiency. Remarkable rain-falls occurred on the 3d, 4th, 5th and 6th, in Texas, accompanying storm No. III, and in Iowa, Missouri and Illinois, on the 18th, accompanying storm No. X. The heavy rain-fall of the Middle Atlantic States occurred, principally, on the 16th, 17th and 18th, in connection with storm No. VII, and on the 29th in connection with No. XIII.

The drought in the Middle Atlantic and southern New England States closed on the 15th, after lasting about six weeks; that in central New York closed on September 3d; that in Tennessee, Ohio, Indiana and portions of Illinois and Iowa, has been only in a slight degree abated by the light rains in those States.

The distribution of the number of rainy days exhibits, in some respects, a notable contrast to the distribution of the number of cloudy days. The greatest number

of rainy days is reported from the Gulf coast, especially Florida and Texas, while the numbers reported from portions of Illinois, Iowa, Nebraska and Michigan, are but little lower. The minimum number of rainy days for the country east of the Rocky Mountains appears in the interior of New England and the basin of the Ohio. The number of cloudy days is decidedly greater on the middle and east Atlantic coasts, reaching a maximum in Maine. The region of minimum cloudiness, averaging five or six days during the month, extends from Ohio and Illinois southward to the Gulf States.

RELATIVE HUMIDITY.

The relative humidity averages about seventy-five per cent. throughout the Gulf and Atlantic States, and diminishes as we proceed inward toward the Ohio valley to sixty-two per cent. The averages for the Upper Lake region are seventy or seventy-five, and for the Lower Lakes about two per cent. less.

PREVAILING WINDS.

The prevailing winds exhibit in general a complete accord with the law according to which they should blow outward from the regions of greatest pressure. The latter region being off the middle Atlantic coast, we find northeast winds prevailing over the South Atlantic and Gulf States, but southerly winds over Maine, Vermont and New York. The low barometer in the Northwest has evidently determined the southerly courses of the winds from Texas to the Upper Lake region, and has had an equal influence on the northerly direction of the winds prevailing in western Dakota. The total movement of the atmosphere irrespective of the direction has been a minimum at Memphis, and less than usual, namely, from fifteen hundred to four thousand miles, over Kentucky and Tennessee and the greater portion of the States adjoining these on all sides. The greatest total movements, viz., from seven thousand to ninety-five hundred, are reported from the Texas and middle Atlantic coasts. The maximum winds have already been mentioned in connection with the respective storms.

NAVIGATION.

On chart No. III is given a table of the highest and lowest stages of the rivers during the month. The fluctuations have in general been very slight, the greatest range being that at Cairo, 10 feet. On the whole, the Missouri river, the Ohio and the lower Mississippi were lower during the latter part of the month than at the beginning. Destructive freshets have nowhere been reported, notwithstanding the heavy local rains reported in the lower Missouri valley and the Middle Atlantic coast.

TEMPERATURES OF WATER.

The observed water temperatures have been as follows:

	Surface maximum.	Bottom minimum.		Surface maximum.	Bottom minimum.
Lower Missouri river.....	72° to 79°	51° to 65°	From Cape Hatteras to		
Upper Mississippi river...	75 to 81	65 to 66	Cape Cod.....	72° to 81°	63° to 70°
The Red river.....	90	75	Cape Cod to Eastport...	53 to 75	49 to 66
The Ohio river.....	75 to 80	60 to 70	Lake Erie.....	74 to 81	60 to 67
The Gulf coast.....	88.5	75	Lake Michigan.....	67 to 75	50 to 63
South Atlantic coast.....	81 to 85	72 to 75	Lake Superior.....	63 to 66	43 to 46

In general it will be noticed that the ranges of temperature are greatest in the Upper Lakes and the Missouri river, and least on the coast of Maine.